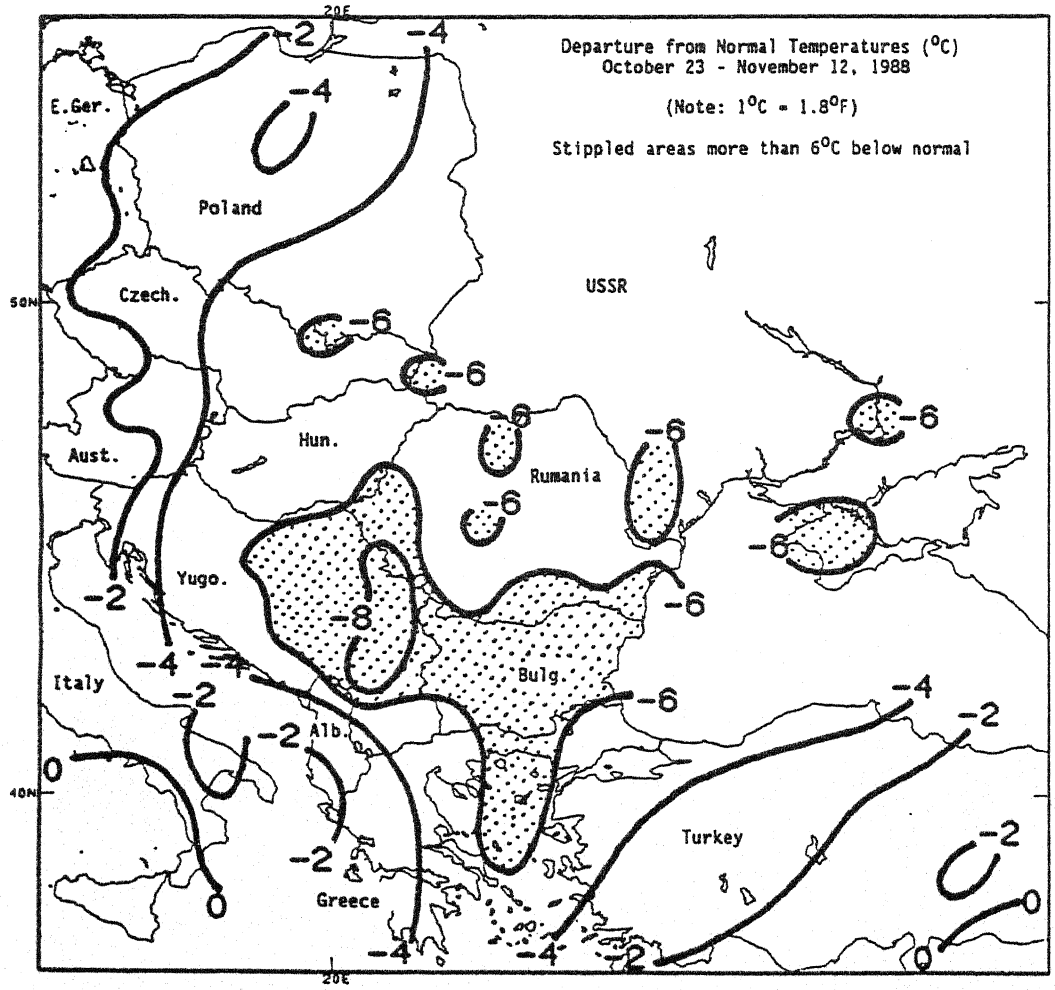
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

No. 88/46 Washington, DC November 12, 1988



UNSEASONABLY COLD WEATHER HAS PERSISTED IN EASTERN EUROPE AND THE EUROPEAN SOVIET UNION DURING THE PAST 3 WEEKS AS TEMPERATURES HAVE AVERAGED AS MUCH AS 8°C (14.4°F) BELOW NORMAL IN SOUTHEASTERN YUGOSLAVIA.

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER

WEEKLY CLIMATE BULLETIN

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This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

Highlights of major global climatic events and anomalies.
U.S. climatic conditions for the previous week.
U.S. apparent temperatures (summer) or wind chill (winter).
Global two-week temperature anomalies.
Global four-week precipitation anomalies.
Global monthly temperature and precipitation anomalies.
Global three-month precipitation anomalies (once a month).
Global twelve-month precipitation anomalies (every 3 months).
Global temperature anomalies for winter and summer seasons.
Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF NOVEMBER 12, 1988

(Approximate duration of anomalies is in brackets)

outhwestern United States:

WARM CONDITIONS PREVAIL.

peratures were as much as 6.9°C (12.4°F) above normal week as unusually warm conditions persisted. See U.S. kly Weather Highlights [6 weeks].

lidwestern United States:

TEMPERATURES MODERATE.

seasonal temperatures returned to much of the area. U. S. Weekly Weather Highlights [Ended at 5 weeks].

rgentina:

BELOW NORMAL PRECIPITATION PERSISTS.

erally less than 11.0 mm (0.43 inches) of precipitation reported in most of northern Argentina [20 weeks].

pain, Portugal, and Southwestern France:

EA UNUSUALLY WARM; NORTHEAST SPAIN WET.

peratures averaged up to 7.1°C (12.8°F) above normal nusually warm conditions prevailed [6 weeks]. Heavy , up to 84.3 mm (3.32 inches), were reported around elona in northeastern Spain [Episodic Event].

5. Eastern Europe:

UNUSUALLY LOW TEMPERATURES OCCUR.

Unseasonably cold conditions were reported in much of eastern Europe from southern Sweden and northwestern European Soviet Union to Greece and western Turkey. Temperatures were as much as 11.7°C (21.1°F) below normal (see front cover) [3 weeks].

6. Eastern Asia:

WARM CONDITIONS REMAIN.

A late season warm spell, with temperatures as much as 10.7°C (19.3°F) above normal, persisted across southeastern Siberia and northeastern China [5 weeks].

7. Australia:

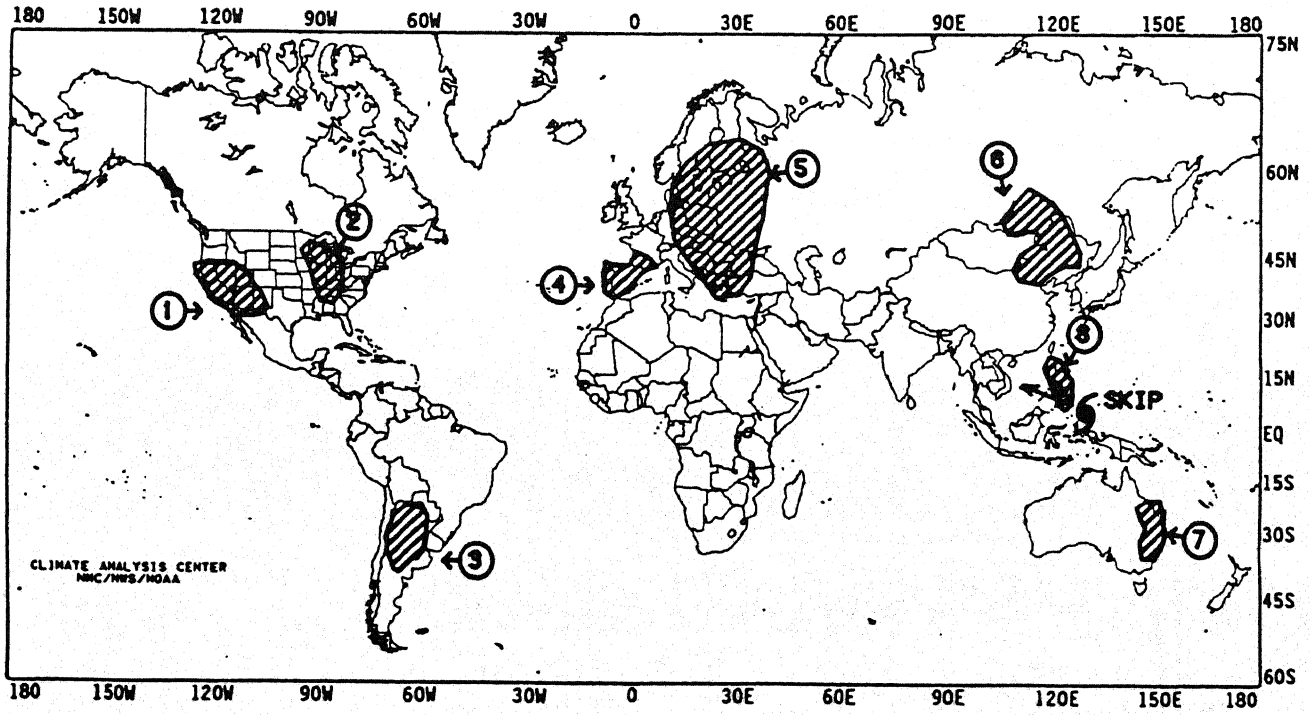
UNUSUALLY DRY IN EAST.

Generally less than 13.0 mm (0.51 inch) of precipitation was reported as unusually dry conditions persisted on the east coast of southeastern Queensland and northeastern New South Wales [5 weeks].

8. Philippines:

ANOTHER TYPHOON.

Heavy rains, as much as 225.3 mm (8.87 inches), and high winds from Typhoon Skip swept across the Philippines, making this the third typhoon in three weeks to hit the country [Episodic Event].



Approximate locations of the major anomalies and events described above are shown on this map. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, longer term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

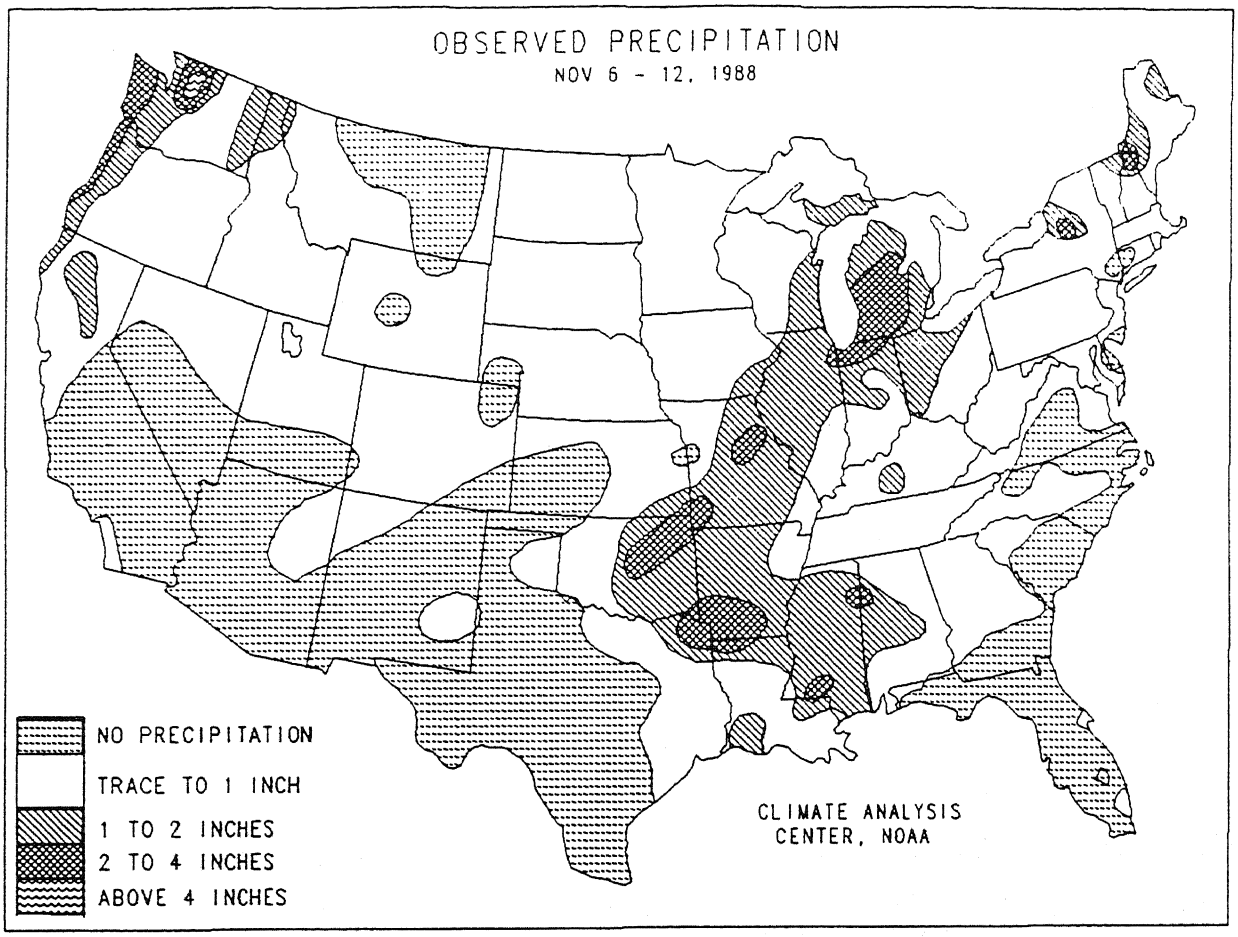
FOR THE WEEK OF NOVEMBER 6 THROUGH NOVEMBER 12, 1988.

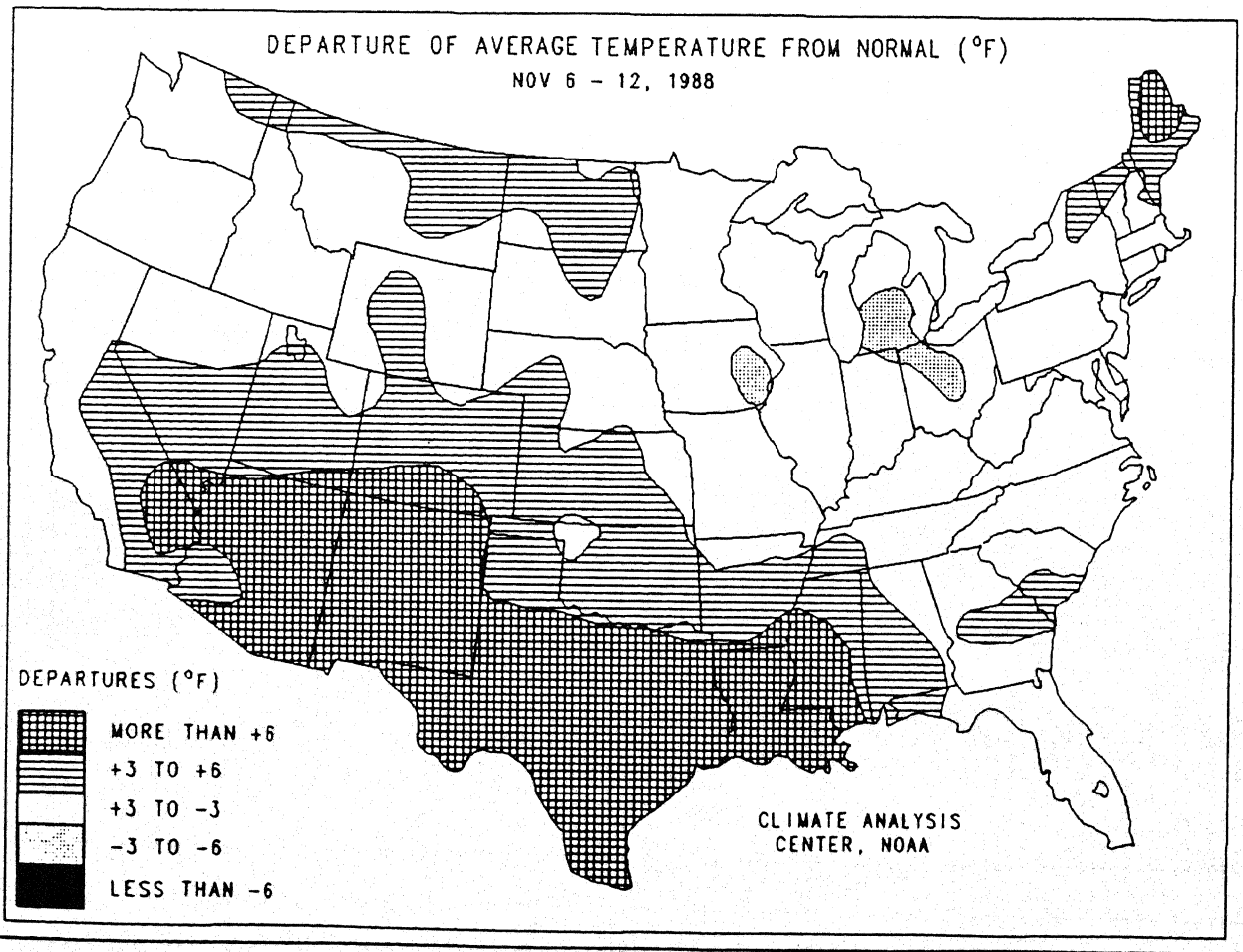
Heavy precipitation was recorded in the nation's northwestern and central sections (see Table 1). For the second consecutive week, a strong storm system lashed the Pacific Northwest, bringing heavy rains and gusty winds to coastal areas and heavy snows to higher elevations. According to the River Forecast Centers, between 2 and 4 inches of precipitation fell this week along the coasts of northern California, Oregon, and Washington and throughout the Cascade Range and the northern parts of the Sierra Nevada Mountains. During the past two weeks, more than 10 inches of precipitation has been measured by several stations along the coasts of Oregon and Washington and in the northern Cascades (see Figure 1). This year, the Pacific Northwest's rainy season (Nov-Mar) is off to a good start, especially after last year's subnormal winter precipitation. Farther east, a low pressure center intensified over the central Great Plains and moved northeastward, triggering heavy showers and thunderstorms (up to 5.8 inches) in eastern Oklahoma, northeastern Texas, southern Missouri, and in parts of the lower Mississippi and Ohio Valleys and central Great Lakes, while heavy snows blanketed much of the Upper Peninsula of Michigan. Elsewhere, heavy precipitation occurred at scattered locations in the central Rockies, south-central Alaska, and Hawaii. Light to moderate precipitation amounts were observed throughout the northern halves of the Pacific Coast, the Intermountain Region, and the Great Plains, the central Rockies, and in much of the country east of the Mississippi River and west of the Appalachians. Little or no precipitation was reported in the southern halves of the Pacific Coast and the Intermountain Region, the northern and southern thirds of the Rockies, the southern Great Plains, and along the Atlantic Coast from Florida northeastward to New Jersey.

For the sixth straight week, abnormally mild conditions persisted in the western and southwestern U.S. The greatest positive temperature departures (between +9° and +13°F) were located across the southern Rockies, the southern Great Plains, and along the western Gulf Coast (see Table 2), while temperatures averaged between 2° and 6°F above normal throughout the Rockies, the northern half of the Great Plains, the Southeast, Hawaii, and New England. Eighteen stations tied or broke daily maximum temperature records during the week as highs in the upper eighties to lower nineties were common in the southern areas of Arizona, New Mexico, Texas, and Louisiana. Temperatures continued to moderate in the Midwest and mid-Atlantic as weekly readings were near to slightly below normal. The greatest negative temperature departures (between -3° and -5°F) occurred in eastern Iowa, northern Illinois, lower Michigan, and Ohio (see Table 3). Parts of eastern Florida, coastal California, and the interior Pacific Northwest also observed slightly cooler than normal weather. In Alaska, bitterly cold Arctic air prevailed for the fifth consecutive week in the northern and central parts of the state as temperatures averaged as much as 13°F below normal.

TABLE 1. Selected stations with two or more inches of precipitation for the week.

Station	Amount(In)	Station	Amount(In)
Kokee, Kauai, HI	8.53	Houghton Lake, MI	2.45
Kodiak, AK	4.25	Marquette, MI	2.35
Quillayute, WA	3.94	Redding, CA	2.35
Hilo/Lyman, Hawaii, HI	3.75	Astoria, OR	2.35
Saginaw, MI	3.35	Muskegon, MI	2.34
Lake Charles, LA	3.35	Dayton, OH	2.30
Lihue, Kauai, HI	3.12	Grand Rapids, MI	2.22
Mt. Washington, NH	2.97	Columbia, MO	2.20
Annette Island, AK	2.91	Tulsa, OK	2.17
Oklahoma City/Tinker AFB, OK	2.70	Shreveport, LA	2.07
Joplin, MO	2.64	Pellston, MI	2.06
South Bend, IN	2.62	Shreveport/Barksdale AFB, LA	2.02
North Bend, OR	2.52	McComb, MS	2.00
Columbus AFB, MS	2.52		


OBSERVED PRECIPITATION
NOV 6 - 12, 1988
NO PRECIPITATION
TRACE TO 1 INCH
1 TO 2 INCHES
2 TO 4 INCHES
ABOVE 4 INCHES
CLIMATE ANALYSIS
CENTER, NOAA


DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)
NOV 6 - 12, 1988
DEPARTURES (°F)
MORE THAN +6
+3 TO +6
+3 TO -3
-3 TO -6
LESS THAN -6
CLIMATE ANALYSIS
CENTER, NOAA

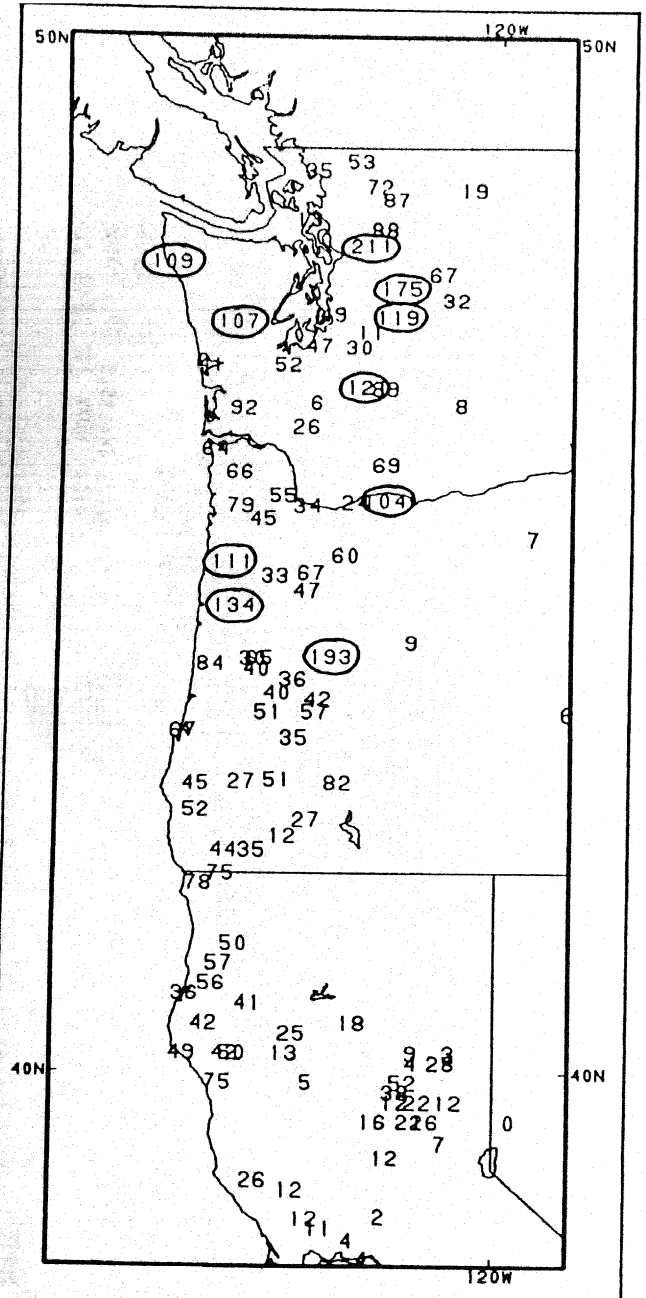


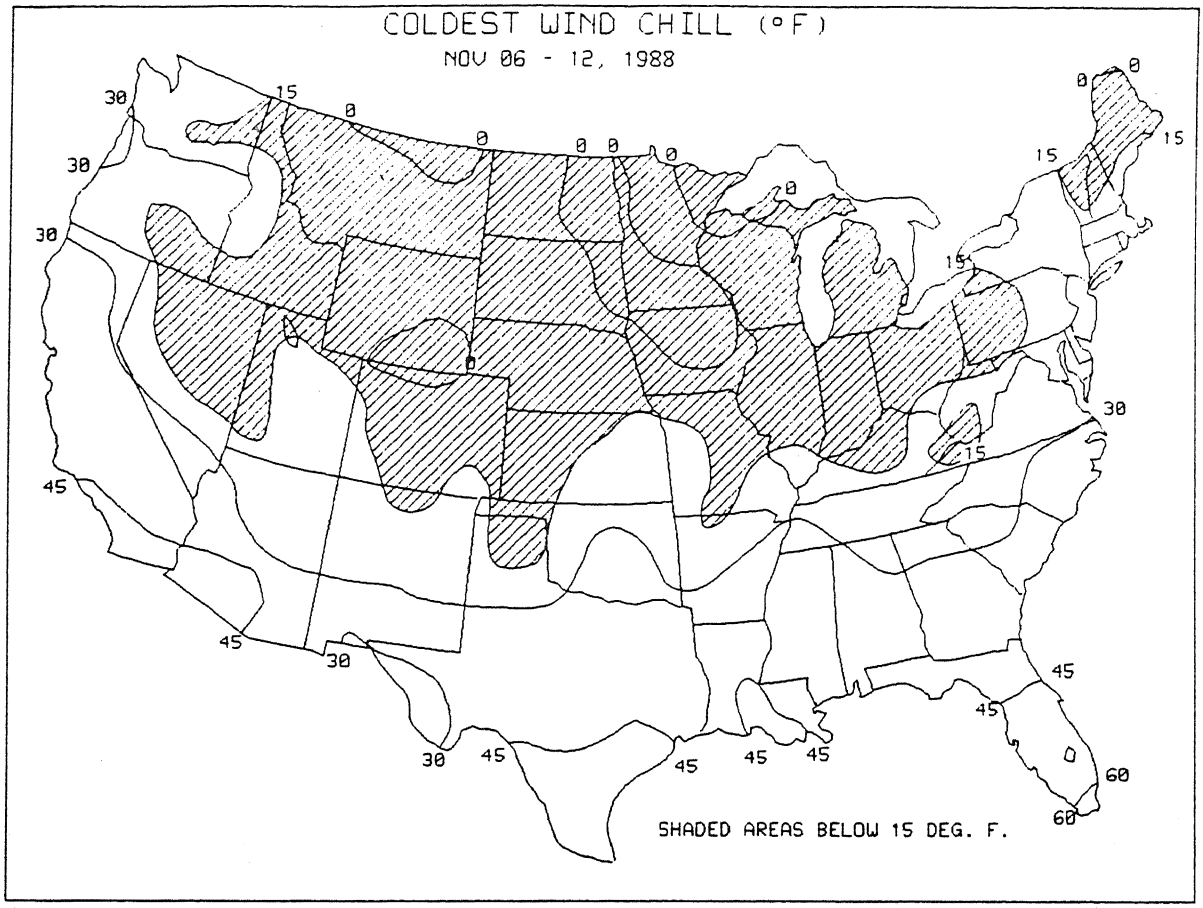
Figure 1. Total precipitation during Oct. 30-Nov. 12, 1988. Station values are in tenths of inches (e.g. 41 = 4.1 inches), and circled amounts are more than 10 inches.

TABLE 2. Selected stations with temperatures averaging greater than 8.0°F ABOVE normal for the week.

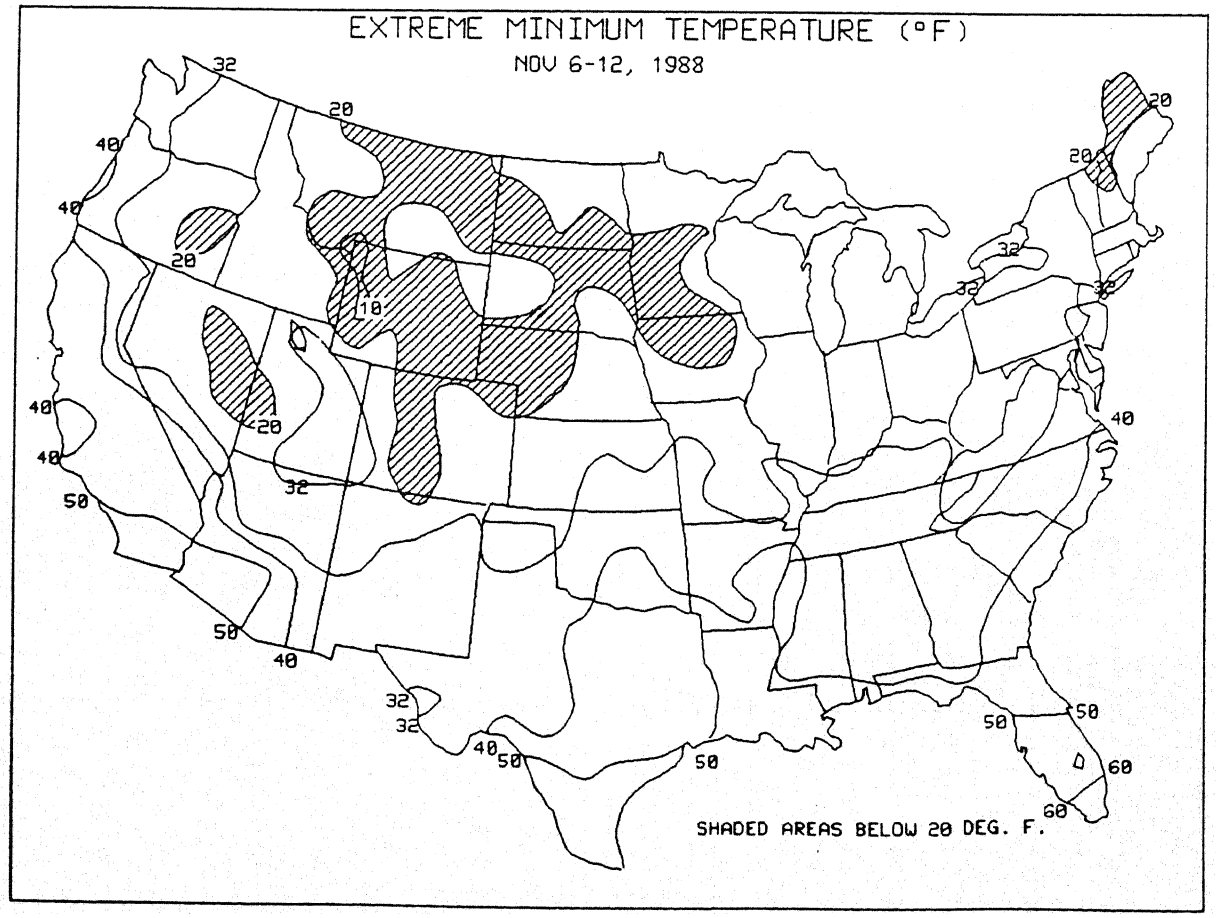
Station	TDepNml	AvgT(°F)	Station	TDepNml	AvgT(°F)
Beeville NAS, TX	+13.3	77.9	Lafayette, LA	+9.4	70.3
Roswell, NM	+12.5	61.4	Midland, TX	+9.4	63.2
San Antonio, TX	+12.4	73.5	Port Arthur, TX	+9.2	70.9
Houston, TX	+12.3	74.3	Baton Rouge, LA	+9.2	69.1
Austin, TX	+12.1	72.4	El Paso, TX	+9.1	62.5
Victoria, TX	+12.0	76.1	San Angelo, TX	+9.0	65.1
Austin/Bergstrom AFB, TX	+11.9	72.2	Del Rio, TX	+8.9	69.9
College Station, TX	+11.7	71.9	Abilene, TX	+8.9	64.1
McAllen, TX	+11.3	79.2	Alamosa, CO	+8.7	40.8
Alice, TX	+11.2	76.8	Lufkin, TX	+8.6	67.5
Galveston, TX	+11.1	75.5	New Orleans/Moisant, LA	+8.5	69.7
Carlsbad, NM	+11.0	63.4	Waco, TX	+8.5	67.3
Palacios, TX	+10.9	74.4	Brownsville, TX	+8.4	77.2
Victorville/George AFB,CA	+10.9	61.7	Lubbock, TX	+8.4	58.5
Kingsville NAS, TX	+10.8	77.2	Prescott, AZ	+8.4	54.0
Phoenix, AZ	+10.2	72.7	Alexandria/England AFB,LA	+8.3	66.8
Corpus Christi, TX	+ 9.9	76.4	Las Vegas, NV	+8.1	63.7
Lake Charles, LA	+ 9.4	70.7			

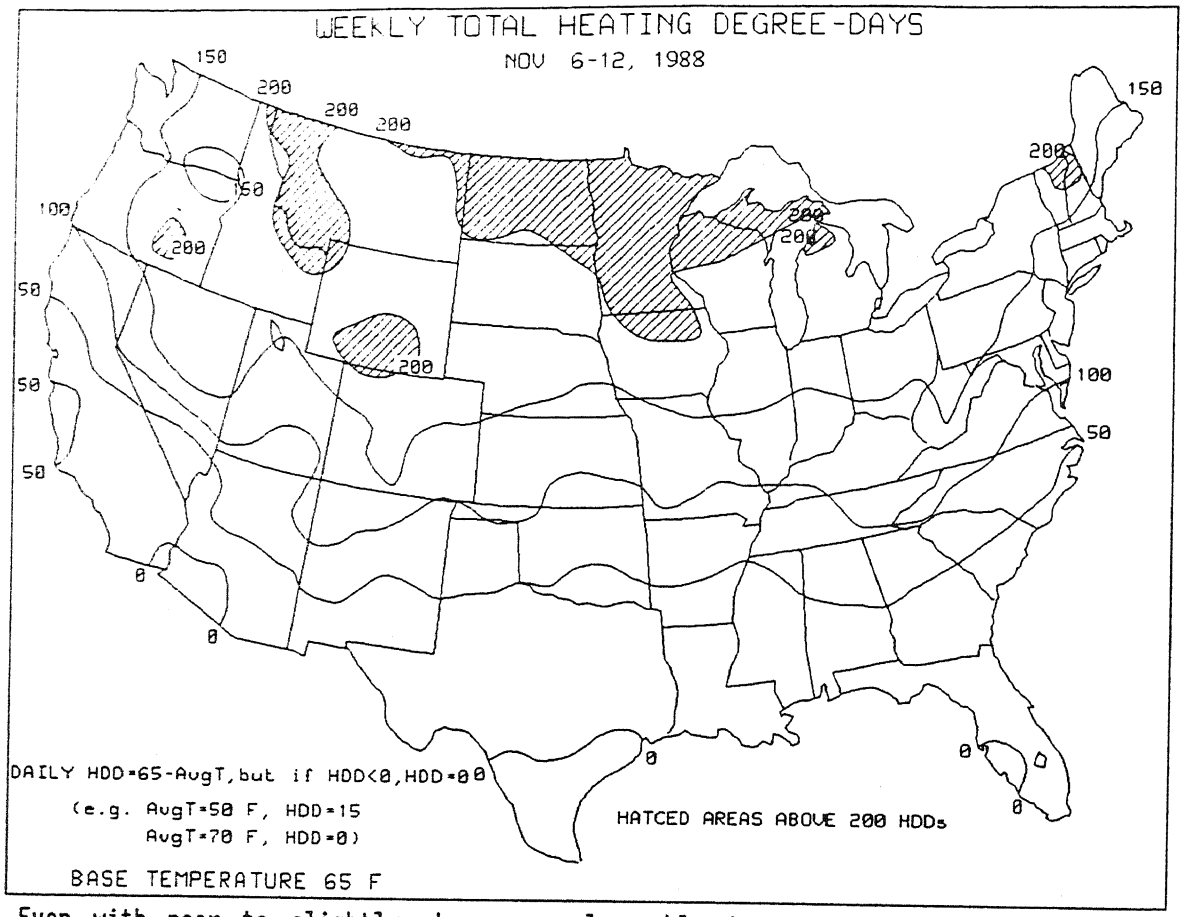
TABLE 3. Selected stations with temperatures averaging more than 3.5°F BELOW normal for the week.

Station	TDepNml	AvgT(°F)
Barter Island, AK	-13.5	-10.2
Gulkana, AK	-12.3	-1.4
Barrow, AK	-10.9	-9.1
Bethel, AK	- 6.9	13.4
Kotzebue, AK	- 5.9	5.1
McGrath, AK	- 5.2	4.3
Aniak, AK	- 4.9	12.9
Mansfield, OH	- 4.9	38.3
Nome, AK	- 4.3	14.4
Jackson, MI	- 4.3	36.9
Grand Rapids, MI	- 3.8	37.2

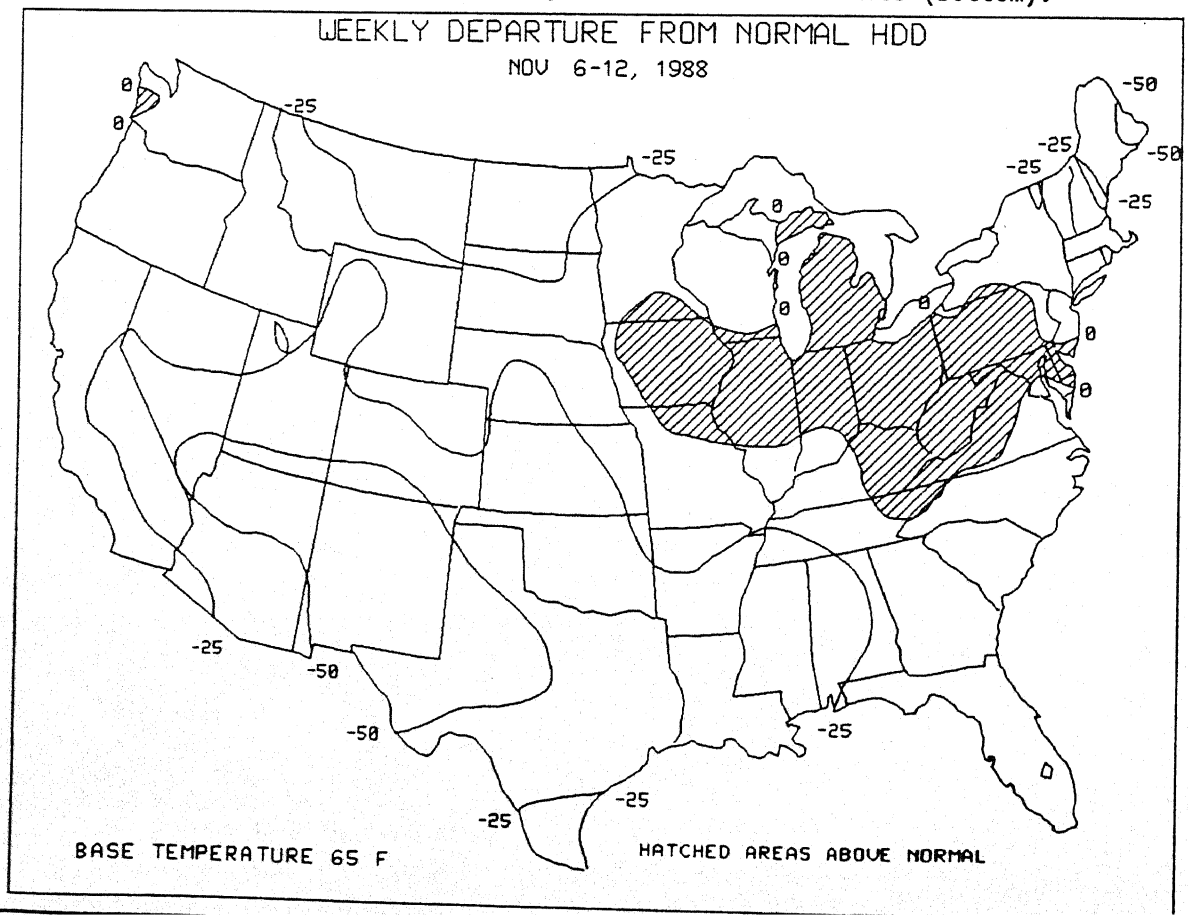


Subzero wind chills occurred in the northern Great Plains and upper Midwest in response to an intense low pressure center located over the central Great Lakes (top). Lows in the teens were limited to the northern Rockies, northern Great Plains, and northwestern New England as weekly temperatures generally averaged near to above normal throughout the country (bottom).



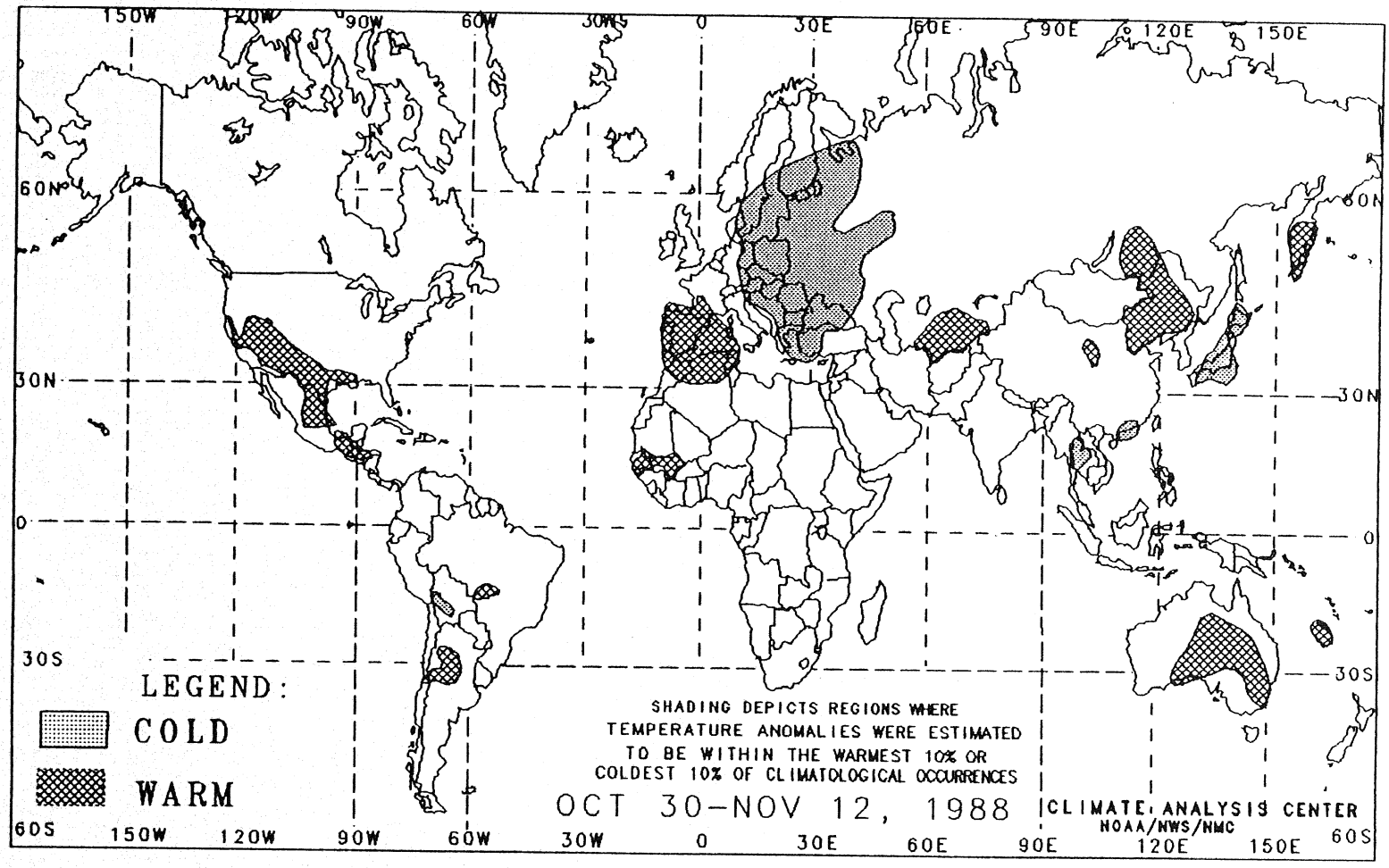


Even with near to slightly above normal weekly temperatures, weekly heating usage was more than 200 HDD's in the north-central U.S. (top). Since most of the nation experienced above normal temperatures, weekly U.S. HDD demand was generally less than normal, especially in the southern Rockies (bottom).



GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

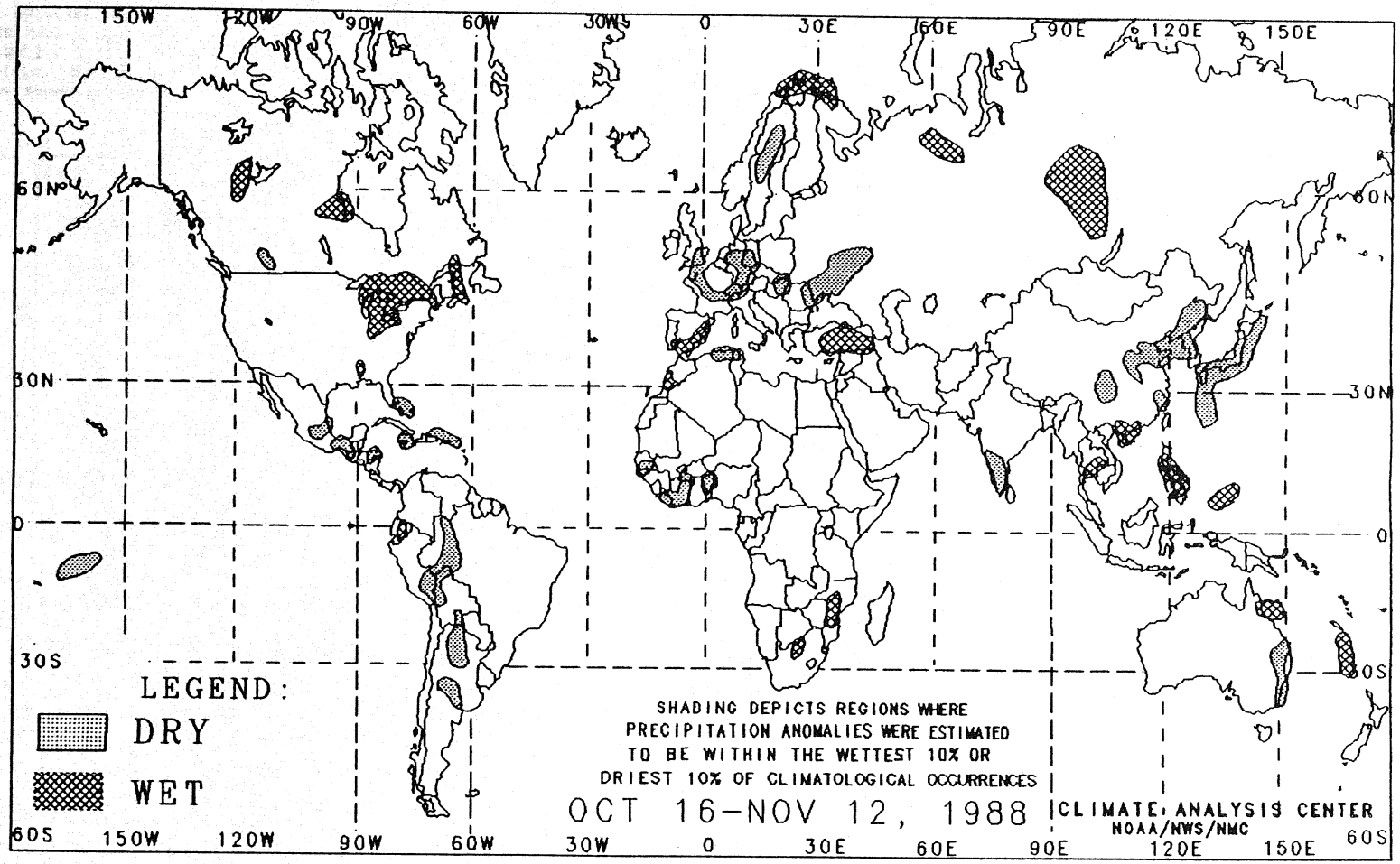
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining precentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data is insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

THE HIGH INDEX PHASE (OPPOSITE OF EL NINO, OR LOW INDEX PHASE) OF THE SOUTHERN OSCILLATION IN THE TROPICAL PACIFIC MAY AFFECT CLIMATIC CONDITIONS WORLDWIDE.

The high index phase of the Southern Oscillation (SO) is, in many ways, characterized by conditions directly opposite to those experienced during the low index phase. In complete contrast to the low SO index phase (commonly known as El Nino), the current high SO index phase is represented by the following equatorial Pacific traits: below normal sea surface temperatures, strong easterly wind flow at the surface, and strong westerly upper air (200 mb) circulation. This current SO phase in the Pacific Ocean basin is likely to be associated with climatic anomalies in several regions.

Past studies by the Climate Analysis Center scientists C. Ropelewski and M. Halpert have already identified those regions where significant climatic responses to an El Nino are most likely (see publication list below). This current study, entitled "Precipitation Patterns Associated with the High Index Phase of the Southern Oscillation", will be published in a forthcoming Journal of Climate. As shown on the next page, the article depicts the regions, the nature of the anomaly, and the most likely months of the occurrence. The following paragraph is the abstract of the study.

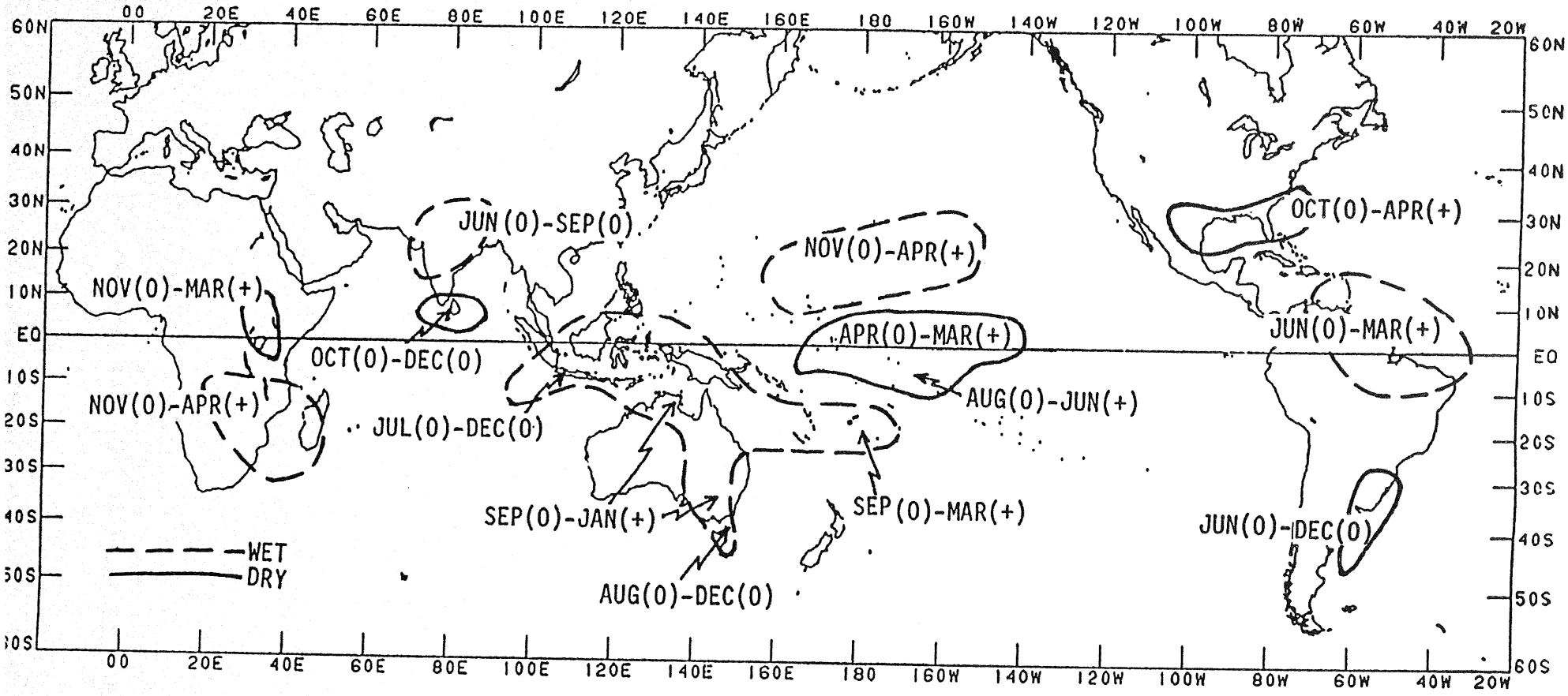
The relationships are examined between precipitation and the high index phase of the Southern Oscillation (SO) for 19 regions of the globe which have documented low SO index-precipitation relationships (Ropelewski and Halpert, 1986, 1987). The study reveals that 15 of these regions also show evidence of characteristic precipitation anomalies during the high index phase of the SO. In each of the regions, the high SO index-precipitation relationships show the opposite sign of those documented for the low index phase. These precipitation relationships were consistent, holding for over 70% of the high SO index years, and statistically significant. In particular, the high index phase of the SO is associated with enhanced precipitation for the monsoons of India and northeastern Australia as well as for the rainy seasons in northeastern South America and southeastern Africa. High SO index precipitation was found to be less than median in the central Pacific, Minicoy-Sri Lanka, eastern equatorial Africa, the Gulf of Mexico and northern Mexico region, and southeastern South America. The seasons which showed high SO index-precipitation relationships were almost identical to the seasons associated with the low index in 13 of the 15 high SO index regions. Thus, to a first approximation, this study suggests that the sign of the precipitation anomaly for these regions is linearly related to the phase of the SO. Since there are 25 low index and 19 high index years in the 108 year analysis period, from 1875 to 1983, these results further suggest that, for over 40% of the years, precipitation may be classified and perhaps predicted on the basis of the extreme SO phase.

References:

C. F. Ropelewski and M.S. Halpert: North American Precipitation and Temperature Patterns Associated with the El Nino/Southern Oscillation (ENSO). Monthly Weather Review, 114, 2352-2362. (December 1986).

C. F. Ropelewski and M.S. Halpert: Global and Regional Scale Precipitation Patterns Associated with the El Nino/Southern Oscillation. Monthly Weather Review, 115, 1606-1626. (August 1987).

REGIONS THAT ARE LIKELY TO EXPERIENCE ANOMALOUS PRECIPITATION CONDITIONS DURING THE HIGH INDEX PHASE OF THE SOUTHERN OSCILLATION.



Note: An "0" in parentheses after the month indicates the month of the same year as the high index phase of the Southern Oscillation began; a "+" indicates the following year. For the event currently in progress, "0" is 1988 and "+" is 1989. For example, above normal precipitation in southeastern Africa are shown as likely between November 1988 and April 1989.